

Appl. No. 09/674,347
Amdt. dated Oct. 10, 2006
Reply to Office Action of June 9, 2006

Amendments to the Drawings:

The attached drawing sheet includes changes to Fig. 1. This sheet, which includes only Fig. 1, replaces the original sheet including Fig. 1. The label "Return Connection" appearing on line 1 has been deleted as it correctly appears on line 1'.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS

In view of both the amendments presented above and the following discussion, the Applicants submit that none of the claims now pending in the application is obvious under the provisions of 35 USC § 103. Thus, the Applicants believe that all of these claims are now in allowable form.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, the Examiner should telephone Mr. Peter L. Michaelson, Esq. at (732) 542-7800 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Specification amendments

Minor amendments have been made to the specification to correct inadvertent grammatical and typographical errors that remained in the specification.

Drawings

The Applicants have discovered a minor error in the sole figure in their drawing. Specifically, the label "Return Connection" appearing on line 1 should be deleted as it correctly appears on line 1'. Accordingly, the Applicants now propose to delete the label on line 1 as indicated in the attached red-lined drawing sheet.

To expedite prosecution, the Applicants have also submitted herewith a corrected replacement drawing sheet that incorporates this correction. The Applicants now request the Examiner's approval of this minor drawing change.

Status of claims

No claims have been amended, added or canceled.

Rejections under 35 USC § 103

A. Claims 14, 15 and 18

The Examiner has rejected claims 14, 15 and 18 under the provisions of 35 USC § 103 as being obvious over the teachings of the Bernstein patent (United States patent 5,912,880 issued to G. M. Bernstein on June 15, 1999) taken in view of those in the Corneliusen patent (United States patent 6,819,672 issued to K. S. B. Corneliusen on Nov. 16, 2004). This rejection is respectfully traversed. For purposes of simplification, the ensuing discussion will primarily be discussed in the context of independent claim 14.

Specifically, the Examiner points to the Bernstein patent, particularly Figure 4 thereof and also to col. 3, lines 1-5 and 25-60, along with the abstract, for its teachings of a measuring device, for use in an ATM transmission system, that measures a time period (t) during

which a predefined number of packets (n) which belong to a common connection are either received or transmitted through that connection. The Examiner concedes that this patent does not disclose that the measuring system could be used for charging (i.e., determining a suitable service charge to a user) for the packet load transported per connection.

With this deficiency in mind, the Examiner then turns to the Corneliusen patent for its apparent teachings of charging in a packet-based communication network, the packet load per connection through use of a measuring device. This device measures the time period (T_{tot}) between a number (m) of received or transmitted packets that belong to the same connection, specifically the time between the arrival of the first packet (where $n=1$) and the last packet (where $n=m$). Given this, the Examiner opines, at least as it appears to the Applicants, that it would have been obvious to one of skill in the art to incorporate the teachings of the Bernstein patent into the measuring device taught by the Corneliusen patent to arrive at a system that charges for ATM packet connections based on inter-arrival times; hence "a user must be charged more if the user sends out a certain number of packets in a shorter time period, since it is a faster connection." From this, the Examiner concludes that these combined teachings would render the present invention obvious. The Applicants strongly disagree with the Examiner's opinion and conclusion.

The Examiner is quite correct in recognizing that Bernstein teaches the concept, with particular use in an ATM system, of measuring an amount of time required for a pre-determined number of cells to arrive through a common connection. However, what the Examiner must keep in mind is the purpose of doing so. It is NOT for charging the cost of the connection, but for a wholly different reason: recover timing for constant bit rate (CBR) streams. As the patentee expressly notes in col. 1, line 11 et seq of the Bernstein patent, certain services that are to be transported on packet networks require synchronization, typically at a transport or application layer in the OSI model, between a transmitting source and a destination receiver. Such services include video and voice. Why is it important to maintain such synchronization? Simply because, as stated in col. 1, line 20 et seq, timing in CBR streams must be recovered to prevent data loss that would otherwise occur through buffer underflow or overflow. The art discussed in the Bernstein patent teaches various techniques (e.g., use of a synchronous residue time stamp (SRTS), and deriving timing from the packet or ATM layer itself based on the CBR nature of the packet or cell stream), but each has serious deficiencies that militates against its use.

Therefore, the goal of the invention in the Bernstein patent is to provide a system that, as expressly stated in col. 1, line 53 et seq.:

"recovers timing from CBR cell transmissions without adversely affecting receiver operation or using SRTS techniques. Such a system should, in addition, not be affected by buffer overflows or underflows in a receiver circuit."

To accomplish this, the invention taught by Bernstein patent recovers timing in a CBR packet stream by: detecting, at a receiver, the receipt of a predetermined number of cells (or packets); measuring, using a receiver clock based on an internal timing source, the period of time that elapses during the receipt of those cells (or packets); and adjusting that timing source based on the measured elapsed time. See, e.g., col. 1, line 65 et seq and, as the Examiner correctly cites, col. 3, line 1 et seq and lines 25-60.

It is abundantly and blatantly clear that the invention disclosed in the Bernstein patent has absolutely nothing whatsoever to do with charging for the use of an ATM connection. Though both the present invention and the timing recovery system disclosed in the Bernstein patent are directed to use in ATM systems, that is where the similarities begin and where they end. The Bernstein patent is utterly devoid of any teachings directed to any other problem than timing recovery. The words "charge" or "cost", or any concept related to determining how and/or how much to charge a user for ATM transport are totally missing from this patent. The Examiner even agrees by having stated: "Bernstein does not disclose that the system is used for charging the packet load per connection."

Now, what does the Corneliusen patent teach?

The Examiner correctly recognizes that this patent teaches a methodology for calculating a monetary charge for a packet connection.

As the Applicants have described in their prior amendment mailed December 6, 2005, essentially and as described in col. 2, line 47 et seq and col. 3, line 40 et seq of the Corneliusen patent, this methodology involves measuring, through a first timer, the time interval (Δt_n) that occurs between two successively arriving packets (packets n and n+1) and updating a second timer (T_{tot}) with the next value of Δt_n when each new packet (n+1) arrives. Hence, during an active connection, the second timer accumulates the total connection time, T_{tot} , as a series of Δt_n values ultimately occurring between the first and last packets transmitted through a connection from the instant the connection starts until it terminates. This concept is mathematically given by the equation shown in col. 3, line 51 et seq where m is the "number of arrived packets", i.e., the total packet count for the connection that occurred during time period T_{tot} . Hence, while the connection occurs, both the time and the packet count are measured and incrementally accumulated, with the final values of both variables then being defined (T_{tot} and m, respectively) only after all the packets have passed through the connection. In that regard, the specification explicitly states in col. 4, line 26 et seq:

"With this invention, the total time for a given connection is the time from the first to the last packet. At any point in time when the equipment is asked for the duration of the connection, the duration provides the time from the first to last packet."

Thus, as the Examiner can readily appreciate, the technique taught by the Corneliusen patent basically relies on measuring: (a) the total time required for a packet connection, and (b) the total count of all the packets carried through that connection, and then basing a connection charge thereon. The charge is thus based on the total time, from start to finish, of the connection and total packet count during that connection, but not merely on any intermediate time period that occurs during the connection itself.

In assessing obviousness of an invention based on combined teachings of multiple references, the United States Circuit Court of Appeals for the Federal Circuit has repeatedly, rigorously and steadfastly articulated its view that a conclusion of obviousness can not be based on hindsight, but must be the product of a suggestion, motivation or teaching in the prior art that would have led a person of ordinary skill to select the references and combine them in the way that would produce the claimed invention. See, *Karsten Manufacturing Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 58 USPQ2d 1286, 1293 (Fed. Cir. 2001) citing its prior decision in *Northern Telecom v. Datapoint* 908 F.2d 931, 934, 15 USPQ2d 1321, 1323 (Fed. Cir. 1990) where the Court stated: "It is insufficient that the prior art disclosed the components of the patented

device, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination made by the inventor."

Along these lines, in *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d. 1367, 62 USPQ2d 1917, 1922 (Fed. Cir. 2002), the Court stated:

"Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention." *ATD Corp. v. Lydall, Inc.* 159 F.3d 534, 546, 48 USPQ2d 1321, 1329 (Fed. Cir. 1998). There must be a teaching or suggestion within the prior art, within the nature of the problem to be solved, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources, to select particular elements, and to combine them as combined by the inventor. See *Ruiz v. A.B. Chance Co.* 234 F.3d 654, 665, 57 USPQ2d 1161, 1167 (Fed. Cir. 2000) ... *Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., Inc.* 21 F.3d. 1068, 1072, 30 USPQ2d 1377, 1379 (Fed. Cir. 1994) ('When the patented invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a combination.')"

See, also, *Vulcan Engineering Co. v. FATA Aluminum Inc.*, 278 F.3d 1366, 61 USPQ2d 1545, 1548 (Fed. Cir. 2002) and particularly *Cardiac Pacemakers Inc. v. St. Jude Medical Inc.*, 381 F.3d 1371, 72 USPQ2d 1333, 1336 (Fed. Cir. 2004) where the Court expressly stated:

"Prior knowledge in the field of the invention must be supported by tangible teachings of reference materials, and the suggestion to combine references

must not be derived by hindsight from knowledge of the invention itself. See *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1578-79 [42 USPQ2d 1378] (Fed. Cir. 1997) ('However, the record must provide a teaching, suggestion, or reason to substitute computer-controlled values for the system of hoses in the prior art. The absence of such a suggestion to combine is dispositive in an obviousness determination.');

Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143 [227 USPQ 543] (Fed. Cir. 1985) ('When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.')

The Federal Circuit in *Beckson Marine Inc. v. NFM Inc.*, 292 F.3d 718, 63 USPQ2d 1031, 1037 (Fed. Cir. 2002) again articulated three sources through which a motivation or suggestion could be found, citing to its prior decision in *In re Rouffet*, 149 F.2d 1350, 1357, 47 USPQ2d 1453, 1456-68 (Fed. Cir. 1998):

"This suggestion or motivation need not be expressly stated. ... but may be shown by reference to the prior art itself, to the nature of the problem solved by the claimed invention, or to the knowledge of one of ordinary skill in the art."

Now, under the Court's mandated analysis, does a suggestion or motivation exist in the Corneliusen and Bernstein patents to support the combination posed by the Examiner, or as shown by from the nature of the problem solved by the claimed invention or by knowledge of one of ordinary skill in the art? NO. No such motivation or suggestion exists at all. Why?

First, consider the applied art itself. Both the Bernstein and Corneliusen patents, while being directed to use with ATM systems -- which is the extent of their commonality, are rather disparate in the problems each faces and inconsistent in their approaches. The Bernstein patent addresses timing recovery of a CBR packet stream, while the Corneliusen patent expressly teaches charging for network usage. What relevance does each of these problems have with the other? None. Aside from that common field of use, the teachings of these two references have nothing of consequence in common and are totally unrelated to each other.

Perhaps, the Examiner conjectured, without fully comprehending the disparity between these two references and the implication, that one skilled in the art would combine these references simply because "one would be motivated to do so since interarrival times can be used to charge a connection". Yet, where does this motivation to combine exist? Certainly not in the Bernstein patent as it is utterly oblivious to the problem of how to charge for use of an ATM connection. As to the Corneliusen patent, it teaches expressly away from basing a charge on interarrival time -- which is a measurement which the Bernstein patent uses for timing recovery, as the former patent explicitly teaches the concept of basing a charge on the TOTAL connection time and the TOTAL packet count occurring during an entire network connection.

Measuring time and packet counts for an entire connection, i.e., from start to finish, is strikingly different and basically opposite to an approach of measuring time required during that connection for a predetermined number of packets to transit over the connection regardless of when that connection actually started or finished.

Why would a person of ordinary skill in the art, when faced with one problem, i.e., how to charge for a packet connection -- as was the case with the present invention, consult one relevant reference, the Corneliusen patent, which teaches one approach, and then turn to another reference that is unrelated and directed to a markedly different and irrelevant problem than in the former reference and which ultimately teaches a strikingly opposite approach in solving its own problem? Simply stated, that person would not. It simply defies all credibility to think otherwise.

Hence, contrary to the Examiner's view, no express motivation or implied suggestion exists in these references to one of skill in the art, when faced with the Applicants' problem, to combine the teachings of the Bernstein and Corneliusen patents to arrive at the combination posed by the Examiner. The teachings of these references, as divergent as they are, simply do not support any such motivation or suggestion, regardless of how implicit the latter might be, and, if anything, strongly discourage their combination.

Given that no motivation or suggestion exists in the applied art to combine the teachings as the Examiner has done, then it stands to reason that only one conclusion can explain it: the Examiner's combination is just a piecemeal combination predicated on hindsight. It is eminently clear to the Applicants that, but for having considered the present invention and its inventive teachings of basing ATM network charges on a time period for a predetermined number of packets to either be transmitted or received, the Examiner would never have been led to the combination which she now posits. The teachings of the applied art simply fall far short of where the Examiner opines they are.

Now, as to whether the nature of the problem solved by the Applicants' invention itself might motivate the combined teachings or suggest it, there is no evidence of record to support this premise. In essence and as discussed on pages 1-3 of the present specification, the Applicants face the problem of how to charge for use of a packet connection, whether in an ATM or IP network, in a manner reflective of performance delivered by the network and performance experienced by a customer, but one which incentivizes a customer to even out its packet (cell) traffic over the duration of the connection and allows the network to match its assigned capacity to that then needed by the customer. The generality of this problem statement provides no express motivation or implied suggestion, to combine the teachings of the Bernstein and Corneliusen patents, let alone in an effort to yield the Applicants'

inventive solution: basing a charge for service on the time required for a predetermined number of packets to transit through the network, i.e., to be transmitted or received. The combined teachings, let alone the Applicants' inventive solution, are clearly not apparent, let alone deducible, from that problem statement.

Furthermore, with respect to the last source of motivation or suggestion to combine as delineated by the Federal Circuit, there is no evidence of record, and certainly nothing credible -- at least the Examiner has not produced any and the Applicants are not aware of any -- to the effect that a person of ordinary skill in the art, based solely on that person's knowledge of the art, would think to combine the teachings of the Bernstein and Corneliusen patents either by way of some express motivation or an implied suggestion in the art. In fact, the contrary is true. That person, being familiar with timing recovery techniques for use in ATM networks such as that taught by the Bernstein patent, as well as conventional techniques for charging for packet network service such as that taught by the Corneliusen patent, would simply have no reason to look to any timing recovery technique to gain practical insight in solving a problem concerning how to properly charge for ATM network service. These aspects are just too disparate to support any such cross-over.

Therefore, in the absence of a suitable motivation or suggestion, present in the applied references, in the problem addressed by the Applicants or in the general knowledge in the art, to combine the teachings of these references as the Examiner has done, the Examiner's attempted combination must fail under the analysis mandated by the Federal Circuit.

The Applicants are not laying any claim to the general concept of measuring, in an ATM network, the arrival time of a predetermined number of packets, but rather to a very specific inventive application of that concept -- one that is just not taught, disclosed or suggested in the art: charging for use of an ATM network connection based on that concept.

Hence, it has remained for the Applicants and only the Applicants to have discovered this particular inventive application of that concept.

Claim 14, as previously presented and currently pending, contains suitable limitations directed to this distinguishing aspect of the present invention. In that regard, this claim states as follows with those recitations being shown below in a bolded type:

"A system for charging, in a packet based telecommunication network, the packet load per connection, the system comprising a measuring device for measuring a time period (t) during which a

predefined number (N) of packets that belong to a common connection are received or transmitted through the connection." [emphasis added]

Consequently, the Applicants submit that claim 14 is not rendered obvious by the teachings of the applied Bernstein and Corneliusen patents.

Each of claims 15 and 18 directly depends from claim 14 and recites further distinguishing aspects of the present invention. Accordingly, the Applicants submit that neither of these two dependent claims is rendered obvious by the teachings of the two applied patents for the same exact reason given above with respect to claim 14. Consequently, both of these dependent claims are also patentable under the provisions of 35 USC § 103.

B. Claims 16, 17, 19 and 20

The Examiner has rejected dependent claims 16, 17, 19 and 20 under the provisions of 35 USC § 103 as being obvious over the teachings of the Bernstein patent taken in view of those in the Corneliusen patent and further in view of those in the Saari et al patent (United States patent 6,338,046 issued to J. I. Saari et al on Jan. 8, 2002). This rejection is also respectfully traversed.

Also, as discussed in the Applicants' prior amendment mailed December 6, 2005, the Saari et al patent also teaches a technique for measuring connection time for use, particularly in an ATM network, in determining an

appropriate charge for that connection. This technique is so substantially different from the Applicants' present invention that it is basically of no real relevance.

Specifically, the technique taught by the Saari et al patent relies on initiating a connection to an ATM node by sending a billing cell, containing connection information, to that node. That specific node then measures the time required for all ATM data cells in the connection to be received at that node. The last cell in the connection is a terminate billing cell which drops the connection to that node. Once the connection to that node is terminated, the node computes, using, in part, information in the billing cell, the incremental cost associated use of that node. This cost accounts for the connection time through that node as well as the amount of data transferred through that node. Thereafter, to transfer the data from that node to a next successive node in a path through the network, the former node will establish a connection to the latter node and generate and transmit a billing cell to the latter node. The billing cell will contain the total cost of the connection thus far. That next node once it has received all the data will, in turn, calculate an incremental connection cost and add that cost to the information in the billing cell it received and pass the resulting accumulated cost, in a new billing cell, to a next successive node in a path through the network, and so on, until the last node in the path has been reached. The last node will transfer its accumulated billing information to a network billing system in order to

bill the entire cost of the connection. See, e.g., col. 3, line 42 et seq; col. 5, line 56 et seq; and col. 6, lines 29-32 of the Saari et al patent.

The Examiner correctly recognizes, as the only potentially relevant aspect of this patent and the reason for its citation, that ATM system cells can contain connection information which defines desired network capacity or priority requested for a connection by a user, or capacity or priority assigned to that connection by a telecommunications system. However, this teaching has no bearing on measuring the time duration t required for a fixed number of packets N to be received at or transmitted by a network connection. In that regard, while the duration is clearly influenced by the priority and network bandwidth (network capacity) which the network assigns to that connection -- which collectively influence the speed through which the network will transfer packets for that connection end-to-end through the network, the mere act of including that information within an ATM system cell, as the Saari et al patent teaches, will not, by itself, dictate the duration. Rather, the then-existing operational characteristics of the network will.

As discussed in considerable detail above, no motivation or suggestion exists that supports the Examiner's attempted combination of the teachings in the Corneliusen and Bernstein patents -- given the disparate nature of the respective problems and solutions taught by these two patents. Therefore, any purported combination of

the teachings of these two patents along with those of the Saari et al patent would be equally suspect and hence, under the analysis laid out by the Federal Circuit, similarly baseless.

Now, given that the Saari et al patent and the Corneliusen patents are both directed to billing for ATM connections, then, reason dictates, that one of skill might look to combine the teachings of these two patents. If that person were to do so, the resulting technique would still rely on measuring, for an ATM connection and as taught the Corneliusen patent, the total time required for the entire connection (however long that connection is from start to finish) along with counting all the packets (cells) that constituted that connection. System packets, as taught by the Saari et al patent, used to establish that connection would contain connection information, including priority and capacity parameters. Such a system falls far short of and uses a measurement technique that lies directly opposite to that taught by the present Applicants, i.e., to fix the number of packets and then measure a time duration needed for that number of packets to be received or transmitted through the packet connection.

As indicated above, independent claim 14 contains suitable recitations directed at the distinguishing features of the present invention. Hence, this claim is not rendered obvious by the Bernstein, Corneliusen or Saari et al patents, regardless of whether the teachings of those patents are taken singly or in any combination,

including that posed by the Examiner. Accordingly, claim 14 is patentable under the provisions of 35 USC § 103.

Each of claims 16, 17, 19 and 20 depends, either directly or indirectly, from claim 14 and recites further distinguishing aspects of the present invention. Accordingly, the Applicants submit that none of these dependent claims is rendered obvious by the teachings of the three applied patents for the same exact reason given above with respect to claim 14. Consequently, each of these four dependent claims is also patentable under the provisions of 35 USC § 103.

Conclusion

Thus, the Applicants submit that none of the claims, presently in the application, is obvious under the provisions of 35 USC § 103.

Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

Respectfully submitted,

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CERTIFICATE OF MAILING under 37 C.F.R. 1.8(a)

I hereby certify that this correspondence is being deposited on **October 10, 2006** with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Signature

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